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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/799,785	03/12/2004	Dipl.-Ing. Karl Schrodinger	16274.181	8312

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EXAMINER	
LIU, LI	

ART UNIT	PAPER NUMBER
2613	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/799,785	SCHRODINGER, DIPL.-ING. KARL	
	Examiner	Art Unit	
	LI LIU	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _25 February 2008_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-9 and 11-21_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-9 and 11-21_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _13 July 2007_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/25/2008 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1-9 and 11-21 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1, 4, 7-9, 11, 13-15, 17, 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davidson (US 2003/0063354) in view of Robinson et al (US 2002/0135845).

1). With regard to claim 1, Davidson discloses a receiver circuit (Figure 2), comprising:

an optical receiving device (photodiode 120 in Figure 2),

a plurality of amplifiers (the amplifiers 156 & 164, and 158 & 162 in Figure 2) which are connected to the receiving device, wherein the plurality of amplifiers each include at least a separate input amplifier stage (e.g., the amplifiers 156 or 158 in Figure 2) and a separate output amplifier stage (e.g., the amplifiers 164 or 162 in Figure 2), wherein the input amplifier stages of the plurality of amplifiers are each coupled to the output of the optical receiving element (e.g., the amplifiers 156 or 158 are coupled to the output of the detector 120, Figure 2), wherein the individual amplifiers of the plurality of amplifiers are connected in parallel with one another (e.g., the amplifiers 156 & 164 are connected in parallel with amplifiers 158 & 162, Figure 2), and wherein the input amplifier stages (e.g., the amplifiers 156 or 158 in Figure 2) of the plurality of amplifiers are only coupled to the output amplifier stage (e.g., the amplifiers 164 or 162 in Figure 2) of the same individual amplifier;

circuit means (switch 172 in Figure 2) for individually activating and deactivating the individual amplifiers ([0030]);

a detecting circuit (e.g., the trigger 180 in Figure 2) for detecting the level of a signal which has been detected by the optical receiving device ([0030]-[0032]); and

one or more control lines connecting the detecting circuit with the circuit means for individually activating and deactivating the individual amplifiers (Figure 2, the line

connecting the trigger with the switch for individually activating and deactivating the individual amplifiers);

wherein the detecting circuit (e.g., the trigger 180 in Figure 2) is configured to provide control signals (the trigger signal is output from the trigger 180) to the circuit means (switch 172 Figure 2) via the one or more control lines for activating the one of the plurality of amplifiers most suited to amplify the incoming signal detected by the detecting circuit;

wherein the amplifiers each differ from one another in at least one parameter (each amplifier has different gain, [0028]), and

wherein only one amplifier is activated at a given point in time and the other amplifiers are deactivated (the trigger generates a control signal to switch between the Gain Path A and Gain Path B, [0030]-[0032], Figure 5).

But, Davidson discloses that the trigger signal is configured to selectively activate one of the amplifiers based on the magnitude of the optical signal power. Davidson does not expressly disclose a detecting circuit for detecting the **bandwidth** of a signal; wherein the detecting circuit is configured to provide control signals to the circuit means via the one or more control lines for activating the one of the plurality of amplifiers most suited to amplify the **bandwidth** detected by the detecting circuit.

Davidson teaches "[u]sing two independent gain paths to amplify the electrical signal generated by a photodetector as shown in FIG. 2 may increase the dynamic range of an amplifier system. For example, with a single gain path, there may be a tradeoff between <u>speed</u> and dynamic range. By providing two gains paths with different

gains, however, this tradeoff may be avoided, providing greater dynamic range than would be possible with a single gain path of equal response speed" ([0007] and [0033]). That is, the multiple gain paths can be used for different "speed" or data rate.

Robinson et al, in the same field of endeavor, discloses a receiver system in which the switching of the amplifiers is based on the **data rate** or bandwidth control signal (Figures 3 and 4, page 1 [0006], page 2-3, [0022]-[0023]). Robinson et al provide a fiber optic receiver that accommodates multiple data rates ([0010].

Robinson et al teaches a detecting circuit for detecting the bandwidth of a signal which has been detected by the optical receiving device (page 2, [0019], a PLL loop or "other techniques in the clock and data recovery circuit" is used to detect the data rate); and one or more control lines connecting the detecting circuit with the circuit means for individually activating and deactivating the individual amplifiers (Figures 3 and 4 show that control lines); wherein the detecting circuit is configured to provide control signals to the circuit means via the one or more control lines for activating the one of the plurality of amplifiers most suited to amplify the bandwidth detected by the detecting circuit (Figures 3 and 4, [0022] and [0023]).

Robinson et al provides a fiber optic receiver that accommodates multiple data rates while conforming to existing receiver optical sub-assembly size and pin count constraints. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply switching based on the data rate as taught by Robinson et al to the system of Davidson so that the multiple data rates of the optical

incoming signal can be processed by the receiver, and the receiver system can be made more flexible.

2). With regard to claim 4, Davidson and Robinson et al disclose all of the subject matter as applied to claim 1 above. And Davidson further discloses wherein the amplifiers each have an input connected to the receiving device and an output (each amplifier 16 and 24 has input and output, e.g., the amplifier 16 has a input connected to switch 18 and connected to PD 12 through amplifier 14, the output of amplifier 16 is connected to another amplifier 30), and wherein the circuit means switch the output on or off for the purpose of individually activating and deactivating the individual amplifiers (the switch 172 in Figure 2).

3). With regard to claim 7, Davidson and Robinson et al disclose all of the subject matter as applied to claim 1 above, and Davidson further discloses wherein the amplifiers each comprise a transimpedance amplifier (Figure 2, [0035]).

4). With regard to claim 8, Davidson and Robinson et al disclose all of the subject matter as applied to claim 1 above, and Davidson further discloses wherein the input amplifier stages (e.g., the amplifier 156 in Figure 2) and the output amplifier stage (e.g., the amplifier 164 in Figure 2) of the plurality of amplifiers are connected in series.

5). With regard to claim 9, Davidson and Robinson et al disclose all of the subject matter as applied to claim 1 above, and Davidson further discloses wherein at least the input amplifier stage amplifier, that is connected to the receiving device comprises a transimpedance amplifier ([0035]).

6). With regard to claim 11, Davidson and Robinson et al disclose all of the subject matter as applied to claim 1 above, and Davidson further discloses wherein the one parameter in which the individual amplifiers differ is the gain (each amplifier has different gain, [0028]).

7). With regard to claim 13, Davidson and Robinson et al disclose all of the subject matter as applied to claims 1 and 12 above. But Davidson does not expressly disclose wherein the individual switches comprise MOS transistors.

Although Davidson doesn't specifically disclose the MOS transistors, such limitation is merely a matter of design choice and would have been obvious in the system of Davidson. Davidson teaches that the switch is a FET-based (Field Effect Transistor) switch ([0031]). The limitations in claim 13 do not define a patentably distinct invention over that in Davidson since both the invention as a whole and Davidson are directed to use transistors as the switches. Therefore, to use a MOS transistors or other kind of transistors would have been a matter of obvious design choice to one of ordinary skill in the art.

8). With regard to claim 14, Davidson and Robinson et al disclose all of the subject matter as applied to claim 1 above, and Davidson further discloses wherein the circuit means is adjusted via at least one control line (the output from the trigger 180 in Figure 2).

9). With regard to claim 15, Davidson and Robinson et al disclose all of the subject matter as applied to claim 1 above, and Davidson further discloses wherein the receiving device comprises a photodiode (the photodetector 120 in Figure 2).

10). With regard to claim 17, Davidson discloses an optical receiver (Figure 2), comprising:

an optical receiving element (photodetector 120 in Figure 2) operable to generate an electrical output signal in response to an optical input signal;

a plurality of amplifiers (the amplifiers 156 & 164, and 158 & 162 in Figure 2) having inputs coupled to an output of the optical receiving element (e.g., the amplifiers 156 or 158 are coupled to the output of the detector 120, Figure 2), wherein the amplifiers each have a unique gain characteristic associated therewith (each amplifier has different gain, [0028]), wherein the plurality of amplifiers include a separated input amplifier stage (e.g., the amplifiers 156 or 158 in Figure 2) and a separate output amplifier stages (e.g., the amplifiers 164 or 162 in Figure 2) wherein the input amplifier stage of the plurality of amplifiers is coupled to the output of the optical receiving element (e.g., the amplifiers 156 or 158 are coupled to the output of the detector 120, Figure 2), wherein the individual amplifiers of the plurality of amplifiers are connected in parallel with one another (e.g., the amplifiers 156 & 164 are connected in parallel with amplifiers 158 & 162, Figure 2), and wherein the input amplifier stages (e.g., the amplifiers 156 or 158 in Figure 2) of the plurality of amplifiers are only coupled to the output amplifier stage (e.g., the amplifiers 164 or 162 in Figure 2) of the same individual amplifier;

a control circuit (the trigger 180 and switch 172 in Figure 2) configured to selectively activate one of the plurality of amplifiers ([0030]-[0032]).

But, Davidson discloses that the trigger signal and switch are configured to selectively activate one of the amplifiers based on the magnitude of the optical signal power. Davidson does not expressly disclose the control circuit is configured to selectively activate one of the amplifiers based on a data rate of the optical input signal.

Davidson teaches "[u]sing two independent gain paths to amplify the electrical signal generated by a photodetector as shown in FIG. 2 may increase the dynamic range of an amplifier system. For example, with a single gain path, there may be a tradeoff between <u>speed</u> and dynamic range. By providing two gains paths with different gains, however, this tradeoff may be avoided, providing greater dynamic range than would be possible with a single gain path of equal response speed" ([0007] and [0033]). That is, the multiple gain paths can be used for different "speed" or data rate.

Robinson et al, in the same field of endeavor, discloses a receiver system in which the switching of the amplifiers is based on the **data rate** or bandwidth control signal (Figures 3 and 4, page 1 [0006], page 2-3, [0022]-[0023]). Robinson et al provide a fiber optic receiver that accommodates multiple data rates ([0010].

Robinson et al provides a fiber optic receiver that accommodates multiple data rates while conforming to existing receiver optical sub-assembly size and pin count constraints. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply switching based on the data rate as taught by Robinson et al to the system of Davidson so that the multiple data rates of the optical incoming signal can be processed by the receiver, and the receiver system can be made more flexible.

11). With regard to claim 18, Davidson in view of Robinson et al disclose all of the subject matter as applied to claim 17 above. And Davidson further discloses wherein the control circuit selectively activates one of the plurality of amplifiers via one or more switches (Figure 2, the trigger 180 and the switch 172 are used for individually activating and deactivating the individual amplifiers).

12). With regard to claim 21, Davidson in view of Robinson et al disclose all of the subject matter as applied to claim 17 above. And Davidson further discloses wherein each input amplifier stage and each output amplifier stage comprising one of the plurality of amplifiers has a different gain characteristic associated therewith than the gain characteristic associated with the other input amplifier stages and output amplifier stages of the optical receiver ([0028]).

2. Claims 2, 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davidson and Robinson et al as applied to claim 1 above, and in further view of Bayart (US 6,069,731).

1). With regard to claim 2, Davidson and Robinson et al disclose all of the subject matter as applied to claim 1 above. But, Davidson does not expressly disclose wherein the amplifiers each have a connection for providing a supply voltage and the circuit means switch the supply voltage on or off for the purpose of individually activating and deactivating the individual amplifiers.

However, Bayart, in the same field of endeavor, discloses a variable gain optical amplifier system in which the amplifiers each have a connection for providing a supply voltage and a circuit means switch the supply voltage on or off for the purpose of

individually activating and deactivating the individual amplifiers (Figure 7, the device CA control the energy supply to amplifiers G1, … Gm, in accordance with gain control word so that the amplifier G_i is the only one operating if the word G has the value i, column 3 line 1-3, and column 6 line 45-57, the electrical power supply can be the voltage).

Since only one amplifier is working at a given time point, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the system or method of supplying the electrical power to only one of the fixed gain amplifiers as taught by Bayart to the system of Davidson and Robinson et al so that the amplifiers can be individually activated and deactivated via the supplying voltage and the power consumption and system cost can be reduced.

2). With regard to claim 3, Davidson and Robinson et al disclose all of the subject matter as applied to claim 1 above, and Davidson further discloses wherein the amplifiers each have an input connected to the receiving device and an output (each amplifier 156 & 164 and 158 & 162 has input and output, e.g., the amplifier 156 & 164 has a input connected to detector 120, the output of amplifier 156 & 164 is connected to switch 172).

But, Davidson and Robinson et al do not expressly disclose wherein the circuit means switch the input on or off for the purpose of individually activating and deactivating the individual amplifiers.

However, Bayart, in the same field of endeavor, discloses a circuit means switch the intput on or off for the purpose of individually activating and deactivating the individual amplifiers (Figure 4, switch SW1, each amplifier G1, .. Gm has an input

connected to the output of the first switch SW1 and has an output connected to an input of the second switch SW2, the structure of the switch SW2 is such that the outputs S_1, S_2, . . . , S_m are connected to input E when the binary word G takes the respective values 1, 2, . . . , m, column 2, line 47-50, and column 5, line 17-29).

By the switches at the input of the amplifiers, one more freedom of controlling of the amplifier system can be obtained. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the switches at the input of the amplifiers as taught by Bayart to the system of Davidson and Robinson et al so that the a better control of different amplifier output can be obtained and also any possible interference from other amplifiers can be removed.

3). With regard to claim 5, Davidson and Robinson et al disclose all of the subject matter as applied to claim 1 above. But Davidson does not expressly disclose wherein the amplifiers each have a current source and wherein the circuit means switch the current source on or off for the purpose of individually activating and deactivating the individual amplifiers.

However, Bayart, in the same field of endeavor, discloses a variable gain optical amplifier system in which the amplifiers each have a current source and a circuit means switch the current source on or off for the purpose of individually activating and deactivating the individual amplifiers (Figure 7, the device CA control the energy supply to amplifiers G1, … Gm, in accordance with gain control word so that the amplifier G_i is the only on operating if the word G has the value I, column 3 line 1-3, and column 6 line 45-57, the electrical power supply can be the current).

Since only one amplifier is working at a given time point, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the system or method of supplying power to only one of the fixed gain amplifiers as taught by Bayart to the system of Davidson and Robinson et al so that so that the amplifiers can be individually activated and deactivated by connecting or disconnecting the current supply, and then the power consumption and system cost can be reduced.

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davidson and Robinson et al as applied to claims 1, 17 and 18 above, and in further view of Schild et al (Schild: “Amplifier Array for 12 Parallel 10 Gb/s Optical-Fiber Links Fabricated in a SiGe Production Technology”, IEEE Radio Frequency Integrated Circuit Symposium, 2002, page 89-92) and Bayart (US 6,069,731).

Davidson and Robinson et al discloses all of the subject matter as applied to claim 1 above. But Davidson does not expressly disclose wherein each amplifier has a plurality of current sources and all the current sources in an amplifier are switched on or off.

However, Schild et al discloses an amplifier that has plurality of current sources (Figures 2 and 3). Schild et al provides the amplifier with high-gain, high input-sensitivity and wide input dynamic range, low power consumption etc. (page 89, ABSTRACT).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the amplifier as taught by Schild to the system of Davidson and Robinson et al so that the power consumption can be reduced and the gain and input-sensitivity can be improved.

Also, Bayart, in the same field of endeavor, discloses a circuit means switch the supply electrical power on or off for the purpose of individually activating and deactivating the individual amplifiers (Figure 7, the device CA control the energy supply to amplifiers G1, … Gm, in accordance with gain control word so that the amplifier G_i is the only on operating if the word G has the value I, column 3 line 1-3, and column 6 line 45-53).

Since only one amplifier is working at a given time point, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the system or method of supplying power to only one of the fixed gain amplifiers as taught by Bayart to the system of Davidson and and Robinson et al and Schild et al so that all the current sources in an amplifier array are switched on or off, and the power consumption and system cost can be reduced.

4. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davidson and Robinson et al as applied to claim 1 above, and in further view of Schild et al (Schild: “Amplifier Array for 12 Parallel 10 Gb/s Optical-Fiber Links Fabricated in a SiGe Production Technology”, IEEE Radio Frequency Integrated Circuit Symposium, 2002, page 89-92).

Davidson and Robinson et al disclose all of the subject matter as applied to claim 1 above.

But Davidson does not disclose wherein the individual amplifiers are monolithically integrated in a common chip.

However, Schild et al discloses an amplifier array wherein the individual amplifiers are monolithically integrated in a common chip (Figure 1). Schild et al provides the amplifier array with high-gain, high input-sensitivity and wide input dynamic range, low power consumption etc. (page 89, ABSTRACT).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the amplifiers integrated in a common chip as taught by Schild to the system of Davidson and Robinson et al so that the power consumption can be reduced and the gain and input-sensitivity can be improved.

5. Claims 12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davidson and Robinson et al (US 2002/0135845) as applied to claims 1, 17 and 18 above, and in further view of Bayart (US 6,069,731) and Geller (US 5,202,553).

1). With regard to claim 12, Davidson and Robinson et al disclose all of the subject matter as applied to claim 1 above. But, Davidson does not expressly disclose wherein the circuit means comprise a plurality of switches that are set individually.

However, Bayart, in the same field of endeavor, discloses a variable gain optical amplifier system in which a plurality of switches (e.g., the input switch SW1 and the output switch SW2) are set individually. And another prior art Geller also teaches a system and method for achieving an optical receiver with increased dynamic range in which two switches (18 and 22 in Figure 4) are implemented in the input paths to activate or deactivate the individual amplifiers. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply multiple switches as taught by Bayart and Geller to the system of Davidson and Robinson et al

so that the a better control of the individual amplifier can be obtained and more control choices are utilized.

2) With regard to claim 19, Davidson and Robinson et al disclose all of the subject matter as applied to claims 17 and 18 above. And Davidson further discloses wherein the one or more switches (the switche 172 in Figure 2) comprise switch coupled between an output of the amplifiers and an output of the optical receiver (Figure 2). And Robinson et al also discloses the amplifier circuit comprises a switch for setting a bandwidth response of the post-amplifier circuit in response to a received data rate control signal.

But Davidson and Robinson et al do not expressly disclose switches coupled between an input of the amplifiers and an output of the optical receiving element, or switches coupled between a power supply and the amplifiers.

However, Geller, in the same field of endeavor, teaches a system and method for achieving an optical receiver with increased dynamic range in which two switches (18 and 22 in Figure 4) are between an input of the amplifiers and an output of the optical receiving element to activate or deactivate the individual amplifiers.

Another prior art, Bayart, also discloses switches implemented in the input paths (Figure 4, switch SW1, each amplifier G1, .. Gm has an input connected to the output of the first switch SW1 and has an output connected to an input of the second switch SW2, the structure of the switch SW2 is such that the outputs S_1, S_2, . . . , S_m are connected to input E when the binary word G takes the respective values 1, 2, . . . , m, column 2, line 47-50, and column 5, line 17-29). Bayart also discloses a switch circuit coupled

between a power supply and the amplifiers (Figure 7, the device CA control the energy supply to amplifiers G1, … Gm, in accordance with gain control word so that the amplifier G_i is the only on operating if the word G has the value i, column 3 line 1-3, and column 6 line 45-53).

By the switches at the input of the amplifiers or for power supplying, one more freedom of controlling of the amplifier system can be obtained. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the switches at the input of the amplifiers as taught by Geller and Bayart to the system of Davidson and Robinson et al so that the a better control of different amplifier output can be obtained, the power consumption and system cost can be reduced and also any possible interference from other amplifiers can be removed.

6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davidson (US 2003/0063354) in view of Robinson et al (US 2002/0135845) and Schild et al (Schild: “Amplifier Array for 12 Parallel 10 Gb/s Optical-Fiber Links Fabricated in a SiGe Production Technology”, IEEE Radio Frequency Integrated Circuit Symposium, 2002, page 89-92).

Davidson in view of Robinson et al disclose all of the subject matter as applied to claim 17 above. And Davidson further discloses wherein the input amplifier stage is a transimpedance amplifier ([0035])

But Davidson does not expressly disclose that each output stage is one or more differential amplifiers.

However, Schild et al discloses an amplifier that comprises at least two amplifier cells that are connected in series (Figures 2, amplifiers 1, 2 and 3 are connected in series). And the first of the amplifier cells, that is connected to the receiving device comprises a transimpedance amplifier (Figure 3); and each output stage is one or more differential amplifiers (Figures 2 and 3).

Schild et al provides the amplifier array with high-gain, high input-sensitivity and wide input dynamic range, low power consumption etc. (page 89, ABSTRACT). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the amplifier array as taught by Schild to the system of Davidson and Robinson et al so that the power consumption can be reduced and the gain and input-sensitivity can be improved.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LI LIU whose telephone number is (571)270-1084. The examiner can normally be reached on Mon-Fri, 8:00 am - 5:30 pm, alternating Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571)272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Li Liu
May 10, 2008

/Kenneth N Vanderpuye/
Supervisory Patent
Examiner, Art Unit 2613